

Financial Experiences, Beliefs, and Near Field Communication-Based Mobile Payments Among Young Adults

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This study examined a conceptual model on the intention to adopt NFC-based mobile payment that incorporates financial experiences and beliefs. NFC refers to Near Field Communication, a new technology in mobile payments. From an online experimental survey of 463 U.S. young adults, this research found consumers who used cards among their payment methods as opposed to cash-only were less likely to adopt NFC mobile payment. Previous experience in non-NFC mobile payments had a significant positive association with intention to adopt NFC mobile payment. Among the beliefs, consumers with higher trust and higher perceived usefulness about NFC mobile payment had greater intentions to adopt it. Moreover, trust was found to have a mediating effect between non-NFC mobile payment experience and the intention to adopt NFC mobile payment. This study not only provides mobile payment providers with effective marketing strategies to increase consumers' adoption of NFC mobile payment but also provides financial educators with important implications to develop targeted education programs.

Keywords: belief, financial experience, intention, NFC mobile payment

According to the Consumers and Mobile Financial Services 2016 report by the Federal Reserve Board, 87% of U.S. adults have a mobile phone of which 77% of mobile phones are smartphones (Dodini, Lopez-Fernandini, Merry, & Thomas, 2016). Along with the growing population of mobile phones, the number of mobile payment users has increased rapidly in recent years. Instead of using traditional payment methods such as cash, debit cards, or credit cards, mobile devices are now widely used to pay for a variety of goods and services (Carlsson, Larsson, Svensson, & Åström, 2017). According to the statistics provided by eMarketer, 25.3% of smartphone users in the United States made at least one proximity mobile payment in 2018, and it is estimated that nearly one-third of smartphone users will have made a proximity mobile payment by 2022 (Kats, 2018).

Mobile payments are financial transactions performed via a mobile device (Liébana-Cabanillas, Sánchez-Fernández, & Muñoz-Leiva, 2014). In Europe and the United States,

mobile payment systems were mostly based on short message service (SMS) or wireless application protocol (WAP; Ondrus & Pigneur, 2007). With SMS or WAP mobile payment, consumers can make payments by sending a text message or scanning quick response (QR) codes with their mobile devices. However, text messages of SMS mobile payments can take time to reach the merchant and can be easily lost (Amoroso & Magnier-Watanabe, 2012). On the other hand, QR codes of WAP mobile payments cannot be used without a wireless Internet connection (Meng & Ye, 2008).

As mobile payment technology becomes more sophisticated, companies introduced new schemes based on Near Field Communication (NFC) technology (Ondrus & Pigneur, 2007). NFC mobile payment facilitates the exchange of payment information between a consumer's mobile device and a merchant's point-of-sale (POS) terminal through touch or wave of the mobile device close to the terminal (Chen, 2008; Li, Liu, & Heikkila, 2014).

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Compared to SMS and WAP payments, NFC mobile payment is quick and safe, and it can be used without an Internet connection. It is estimated that NFC-based mobile payments can be 15 to 30 seconds faster than swiping a card and signing the receipt or entering a PIN of a smartcard at a POS (Hayashi, 2012). Not only does NFC technology save time to complete a payment, but it allows a bi-directional exchange of information. A bank can electronically authorize payments to the store and the store's payment terminal can then send the phone a receipt as well as a coupon or other marketing information for future purchases (Hamblen, 2012).

Since NFC mobile payment is still in its infancy, it will require enthusiastic consumer adoption before it can truly take off (Pham & Ho, 2015). Given the advantages of NFC mobile payment, however, the adoption rate is still low in the United States (Kats, 2018). Thus, it is critically important for service providers to understand what drives consumers to adopt the NFC mobile payment. As young consumers were found more likely to be innovators and early adopters of new technology (Bapat, 2019; Dodini et al., 2016; Lee & Lee, 2000; Li, Lee, & Cude, 2002; Yao & Meng, 2018), a random sample of young adults aged 18 to 35 were investigated in this study.

The purpose of the research was to empirically examine a conceptual model of the intention to adopt proximity NFC-based mobile payment among young adults. The model incorporates the influences of financial experiences and beliefs on NFC mobile payment adoption. An online experimental survey was conducted on a sample of respondents aged 18 to 35 with no prior experience with NFC mobile payment but quite possibly with other advanced payment methods using mobile technologies or cards. The results of this study are valuable to deepen researchers' understanding of the impact of the financial experiences and beliefs on consumers' intention to adopt new financial technology. The findings can also help financial technology providers effectively increase the intention to adopt NFC mobile payment among young adults.

Literature Review and Hypotheses

Theoretical Background

The Transfer of Learning Theory and the Technology Acceptance Model (TAM) both provided a framework for

this study. The first theory explained how previous financial experiences can be transferred and applied to the intention to adopt new technology. Transfer of learning occurs when learning in one context impacts performance in another context (Perkins & Salomon, 1992). In the context of the adoption of new technology, transfer of learning refers to "the process that skills, processes, or content that consumers have learned during past usage of different technologies enhances or undermines individuals' potential usage of similar or new technologies" (Jia, Hall, & Sun, 2014, p. 2). Thus, financial experiences with different payment methods and mobile banking were examined to explain the effect of previous financial experiences on learning and adopting NFC mobile payment, a new type of financial technology.

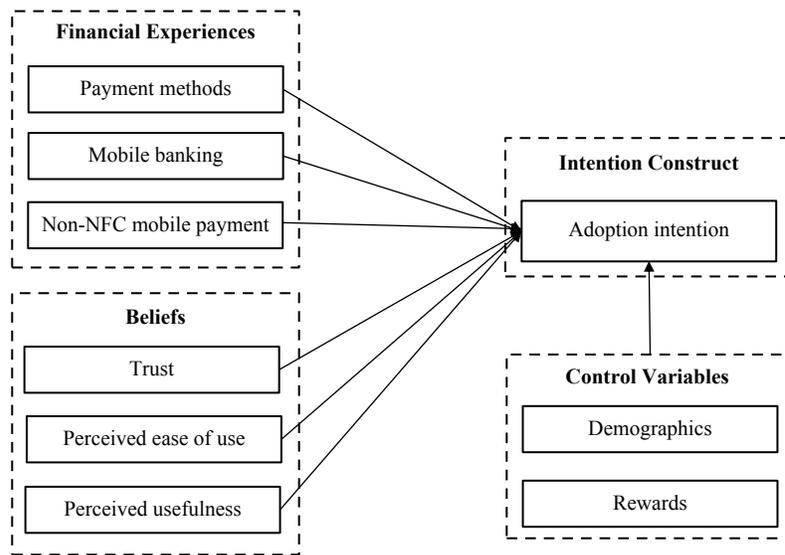
The TAM was adapted to help frame the influence of beliefs on the intention to adopt new technology. According to TAM, the intention to adopt new technology is determined by perceived ease of use and perceived usefulness. Perceived ease of use refers to the degree to which an individual believes that using new technology would be free of a burdensome effort. Perceived usefulness is defined as the degree to which an individual believes that using new technology would improve his or her job performance (Venkatesh & Davis, 2000). Thus, perceived ease of use and perceived usefulness are critical factors that can determine the adoption of NFC mobile payment.

Based on this integrated framework, a conceptual model was developed as shown in Figure 1. Intention is one of the most important constructs because the actual behavior of adopting NFC mobile payment is directly determined by behavioral intention (Tan, Ooi, Chong, & Hew, 2014). Behavioral intention is described as the extent to which one is willing to try and exert themselves into performing a behavior (Leong, Hew, Tan, & Ooi, 2013). Financial experiences and beliefs are posited to have significant effects on the intention to adopt NFC mobile payment. Because the availability of financial incentives has been found to have a significant positive impact on the intention to adopt NFC mobile payment (Zhao, Anong, & Zhang, 2019), rewards in addition to demographics (including age, gender, income, and education attainment) are added as control variables.

Financial Experiences

Previous financial experiences of consumers are believed to impact their intention to adopt mobile payment (Kim,

Figure 1. Conceptual model.



Mirusmonov, & Lee, 2010). It has been found that existing payment instruments influence the adoption of new payment methods such as NFC mobile payment (Dahlberg & Oorni, 2007; Yang, Lu, Gupta, Cao, & Zhang, 2012). New payment technology may compete or complement traditional or existing payment methods including cash, checks, debit cards, credit cards, prepaid cards, and gift cards. Trutsch (2016) found mobile payment did not replace cards but did act as a substitute for paper-based cash or check payments. Zhao (2017) found cash users had higher levels of the intention to use NFC mobile payment than card users. The present study extends the literature by examining how financial experiences in using different payment methods, mobile banking, and non-NFC mobile payments influence the intention to adopt NFC mobile payments.

Mobile banking involves accessing and managing deposit accounts through a web browser or app downloaded to a mobile device, or via text messaging (Dodini et al., 2016). The most common mobile banking activities include transferring money, mobile deposits, checking recent transactions and account balances, and getting notifications and alerts from a financial institution. Although mobile banking is closely related to mobile payment, the association between mobile banking and mobile payment behaviors is unclear (Dahlberg, Mallat, Ondrus, & Zmijewska, 2008). Therefore, this study investigates whether consumers with

mobile banking experience are more likely to use NFC mobile payment.

Ramfos et al. (2004) proposed that consumers with previous mobile payment experience have a better understanding of its convenience and security. Slade, Williams, and Dwivedi (2013) grouped mobile payment into remote mobile payment and proximity mobile payment. SMS-based mobile payment is an example of remote mobile payment, while QR payment and NFC mobile payment represent proximity mobile payment. Zhao (2017) found consumers with non-NFC mobile payment experiences had higher levels of the intention to use NFC mobile payment. Based on these studies on payment experiences, three hypotheses were proposed.

H1: Cash users will have higher levels of the intention to use NFC mobile payment than card users.

H2: Mobile banking is positively related to the intention to use NFC mobile payment.

H3: Non-NFC mobile payment experience is positively related to the intention to use NFC mobile payment.

Beliefs

One's belief system about a new technology inevitably affects the intention to adopt it (Lennon et al., 2007). Previous studies have shown that perceived ease of use and perceived usefulness have significant positive relationships with the intention to adopt other types of mobile payments. Kim et al. (2010) found perceived ease of use and perceived usefulness to be strong predictors for the intention to use mobile payment. Tan et al. (2014) applied TAM to examine factors affecting the intention to use NFC credit cards also known as contactless cards. They found that perceived usefulness and perceived ease of use had significant and positive effects on the intention to use these.

TAM had been adapted by some researchers to include additional constructs particularly trust. Shin (2010) concluded that trust had a significant impact on consumer intention to use mobile payment based on a sample of 294 U.S. consumers. One study defined trust in mobile payments as the degree in which one believes that the usage of mobile payment is reliable and trustworthy (Leong et al., 2013). Zhou (2014) examined initial trust in mobile payment and found that it affected the intention to use mobile payment. Therefore, the following hypotheses were developed.

H4: Trust is positively related to the intention to adopt NFC mobile payment.

H5: Perceived ease of use is positively related to the intention to adopt NFC mobile payment.

H6: Perceived usefulness is positively related to the intention to adopt NFC mobile payment.

Method

Data and Sample

Data were collected from a sample of U.S. young adults who had no previous experience with NFC mobile payment. The human subject application was approved by the University of Georgia's Institutional Review Board. Respondents were recruited using Qualtrics Online Research Panels & Sample to participate in the online experimental survey during 2 days in August 2017. The Qualtrics panel has been used to collect data in many previous studies and provides high-quality responses (Brandon, Long, Lorraas, Mueller-Phillips, & Vansant, 2013). Each respondent was screened through two quality control checkpoints. First, a commitment question asked respondents to commit to providing high-quality answers, and second, a speed check was

enforced to exclude those who spent less than one-third of the median time to complete the survey (4.7 minutes). A total of 629 respondents participated in this survey and 501 respondents completed their questionnaires.

Next, respondents were asked to review a short paragraph describing how NFC mobile payment works. This was important since one of the inclusion criteria was no prior experience with NFC mobile payment. If respondents said they did not understand NFC mobile payment transactions, they were invited to click a link to view a demonstration video available on YouTube which the researchers had selected as an appropriate tutorial. Those who watched the video were asked again if they understood NFC mobile payments before proceeding. After enforcing the quality control checks and verifying that respondents understood NFC mobile payment, the final sample size was 463.

Measures

All the measures included in the estimations are presented in Table 1. Intention was measured by five items adapted from Tan et al. (2014). In addition, existing measurements were adapted to measure trust (Xin, Techatassanasoontorn, & Tan, 2013), perceived ease of use (Venkatesh & Bala, 2008), and perceived usefulness (Davis, 1989). All the items were evaluated on a 7-point Likert scale, ranging from completely disagree (1) to completely agree (7).

Three questions developed by the researchers were used to measure financial experiences for this study. First, respondents were asked, "*Which of the following payment methods do you use at local retail stores, such as grocery stores, restaurants, and gas stations? Cash, Check, Debit card, Credit card, Prepaid card or gift card (Check all that apply).*" Participants were grouped into cash-only, card-only, or cash and card users using binary indicators. Cash-only included cash, checks, or both cash and checks. Card-only was for using one or more cards including debit cards, credit cards, prepaid debit cards, and gift cards. Cash and card was for combination use of payment methods in both categories.

Dummy indicators were used for responses about engaging in five mobile banking behaviors following this question,

Using your mobile phone, have you done any of the following in the past 12 months?

TABLE 1. Measurement Items Used in the Survey

Variables	Items
Dependent Variable	
Intention to adopt NFC mobile payment	<ol style="list-style-type: none"> 1. I am likely to use NFC mobile payment in the near future 2. Given the opportunity, I will use NFC mobile payment immediately 3. I am willing to use NFC mobile payment in the near future 4. I will think about using NFC mobile payment 5. I intend to use NFC mobile payment services when the opportunity arises
Financial Experiences	
Payment method	<p>Which of the following payment methods do you use at local retail stores, such as grocery stores, restaurants, and gas stations? (Check all that apply)</p> <ol style="list-style-type: none"> 1. Cash 2. Check 3. Debit card 4. Credit card 5. Prepaid card or gift card
Type of mobile banking experience	<p>Using your mobile phone, have you done any of the following in the past 12 months? (Yes/No)</p> <ol style="list-style-type: none"> 1. Checked an account balance or checked recent transactions 2. Received an alert (e.g., a text message, push notification or email) from your bank 3. Transferred money between your bank accounts 4. Deposited a check to your account electronically using your mobile phone camera 5. Located the closest in-network ATM or branch for your bank
Type of non-NFC mobile payment experience	<p>Have you used mobile payment to pay for the following transactions in the past 12 months? (Yes/No)</p> <ol style="list-style-type: none"> 1. Sent money to relatives or friends (e.g., Venmo, PayPal, Google Wallet, your bank's app) 2. Paid for something in a store scanning a QR code 3. Purchased a physical item or digital content remotely by using your mobile phone's web browser or an app 4. Paid a bill using your mobile phone's web browser or an app 5. Made a donation or other payment using a text message 6. Paid for parking, a taxi, car service (e.g., Uber), or public transit

(Continued)

TABLE 1. Measurement Items Used in the Survey (Continued)

Variables	Items
Beliefs	
Trust	<ol style="list-style-type: none">1. I trust NFC mobile payment to be reliable2. I trust NFC mobile payment to be secure3. I trust NFC mobile payment to be trustworthy4. Overall, I trust NFC mobile payment
Perceived ease of use	<ol style="list-style-type: none">1. Using NFC mobile payment is clear and understandable2. Using NFC mobile payment does not require mental effort3. Learning to use NFC mobile payment is easy for me
Perceived usefulness	<ol style="list-style-type: none">1. NFC mobile payments are fast2. NFC mobile payments are efficient3. NFC mobile payments are convenient

Note. NFC = near field communication; QR = quick response.

Checked an account balance or checked recent transactions.

Received an alert (e.g., a text message, push notification or email) from your bank.

Transferred money between your bank accounts.

Deposited a check to your account electronically using your mobile phone camera.

Located the closest in-network ATM or branch for your bank.

Purchased a physical item or digital content remotely by using your mobile phone's web browser or an app.

Paid a bill using your mobile phone's web browser or an app.

Made a donation or other payment using a text message.

Paid for parking, a taxi, car service (e.g., Uber), or public transit.

A single measure for mobile banking experience summing up the five dummy indicators was created. It ranges from “0” for those who had no mobile banking experience to “5” for those who had performed each of these activities.

Similarly, responses to six types of mobile payment transactions were summed to form a measure of mobile payment experience where “0” is for those who had never used mobile payments and “6” for those who had used all six types of mobile payment. The survey question from which this measure was derived is,

Have you used mobile payment to pay for the following transactions in the past 12 months?

Sent money to relatives or friends (e.g., Venmo, PayPal, Google Wallet, your bank's app).

Paid for something in a store scanning a QR code

In the experimental survey, some of the respondents were asked to assume they can get financial rewards (discounts or cash back) when making purchases with NFC mobile payment while others were not. Thus, a binary indicator named *rewards* was created to measure whether financial rewards were offered. Demographic characteristics included in this study were gender, age groups, race/ethnicity, education, and annual household income.

Analytical Procedures

As shown in Table 2, the factor loadings, composite reliability (CR), and average variance extracted (AVE) exceed the threshold of 0.5, 0.7, and 0.5, respectively, which is adequate for convergent validity of all items (Fornell & Larcker, 1981). The square root of AVE for each latent variable was greater than the surrounding values in the correlation

TABLE 2. Reliability and Validity for Multi-Item Variables

Measure	Items	Factor Loadings	Cronbach's	CR	AVE
Trust	4	0.857–0.945	0.952	0.952	0.832
Perceived ease of use	3	0.762–0.851	0.851	0.853	0.660
Perceived usefulness	3	0.857–0.918	0.913	0.911	0.774
Intention	5	0.801–0.904	0.940	0.940	0.757

Note. CR = composite reliability; AVE = average variance extracted.

TABLE 3. Correlation Matrix Between Multi-Items Variables

	1	2	3	4
1. Trust	0.912			
2. Perceived ease of use	0.408	0.813		
3. Perceived usefulness	0.508	0.706	0.880	
4. Intention	0.712	0.327	0.425	0.870

Note. Square root of average variance extracted (AVE) is shown on the diagonal of the correlation matrix (in bold).

table (see Table 3), indicating that all constructs passed the discriminant validity test (Fornell & Larcker, 1981). Cronbach's alpha values were all greater than 0.851 which indicated high internal reliability of the scales (Cronbach, 1951; Swafford, Ghosh, & Murthy, 2006).

The conceptual model was estimated using a three-stage hierarchical multiple ordinary least squares (OLS) regression with the intention to adopt NFC mobile payment as the dependent variable. A set of control variables were entered in the first stage of the regression. Cash or card payment methods, mobile banking, and non-NFC mobile payments were added in the second stage, and trust, perceived ease of use, and perceived usefulness were added in the third stage.

Results

Sample Characteristics

Summary statistics of the sample are presented in Table 4. The majority of respondents were women (84%), aged 26–35 (69%), and White (77%). Nearly half of the respondents reported having a college degree or a graduate degree. Around one-third of the respondents had an annual household income of less than \$30,000 (33%) and another 32% had between \$30,000 and \$49,999. Rewards were offered to 410 (88.55%) respondents.

Beliefs and NFC Mobile Payment Intention by Financial Experiences

Table 5 shows the mean values of trust, perceived ease of use, perceived usefulness, and the intention to adopt NFC mobile payment in terms of financial experiences in payment methods, mobile banking functions, and other types of mobile payment experience. There is no significant difference in the trust levels nor the average intention to adopt NFC mobile payment among users of cash and/or card methods. Cash and card users had the highest perceived ease of use and the highest perceived usefulness, followed by card-only users. Generally, there is an increasing level of intention to adopt NFC mobile payment with more mobile banking experience. Those with no experience had the lowest average score on intention and those using a higher number of mobile banking functions had the highest score. A similar trend is seen with non-NFC mobile payment experience where the lowest average scores on the intention to adopt NFC mobile payment were among those with little or no experience. It is interesting that levels of trust and perceived usefulness were significantly different across levels of non-NFC mobile payment experience.

Hierarchical Regression Results

The hierarchical OLS regression results are presented in Table 6. The Variation Inflation Factor (VIF) for all the variables indicate that multicollinearity was not an issue (Chatterjee, Hadi, & Price, 2000). The results of the first stage in Model 1 reveal that demographic variables and rewards accounted for only 2.3% of the variation in the intention to adopt but this was insignificant, $F(10, 452) = 1.081, p > .05$. Financial experience variables added in Model 2 significantly explained an additional 11.6% of the variation, $\Delta F(4, 448) = 20.310, p < .001$. Introducing beliefs in Model 3 significantly explained an additional 42.8%, $\Delta F(3, 445) = 146.786, p < .001$. The final model accounted for 56.7% of the total variance in the intention to use NFC mobile payment.

TABLE 4. Sample Statistics

Variables	Descriptive Statistics	
	<i>n</i>	%
Gender		
Male	74	15.98
Female	389	84.02
Age Group		
18–25	145	31.32
26–35	318	68.68
Race		
White	356	76.89
Other	107	23.11
Education		
High school or less	134	28.94
Some college	128	27.65
College degree	166	35.85
Graduate degree	35	7.56
Annual Household Income		
Less than \$30,000	151	32.61
\$30,000–\$49,999	147	31.75
\$50,000–\$79,999	116	25.05
\$80,000 or more	49	10.58
Rewards		
Yes	410	88.55
No	53	11.45

Compared to cash-only payments, using both cash and cards was negatively related to the intention to adopt NFC mobile payment but this is only slightly significant at the 10% level. Previous experience in non-NFC mobile payment was positively associated with the intention to adopt NFC mobile payment. Thus, H3 was supported while H1 and H2 were not supported. Trust and perceived usefulness were both found to be positively related to the intention to adopt NFC mobile payment but perceived ease of use was not a significant factor. Therefore, H4 and H6 were supported but H5 was not supported.

Including beliefs in Model 3 reduced the direct effect of financial experience variables on adoption intention. This suggested financial experience variables may have indirect effects on adoption intention through beliefs. A mediation analysis was conducted following a similar procedure to Hayes (2013) to test mediation effects. The

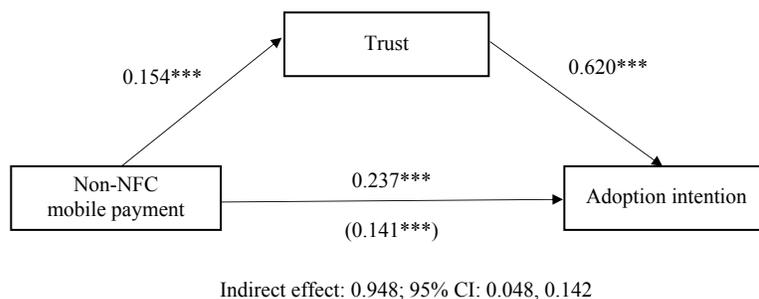
results indicated that trust was the sole belief to significantly mediate the association between the experience in non-NFC mobile payment and the intention to adopt NFC mobile payment. Results in Figure 2 suggest that higher intention of NFC mobile payment by young consumers with more-types experience of non-NFC mobile payment can be partly explained by these consumers generally also having higher trust on NFC mobile payment.

Finally, having rewards versus none was associated with higher levels of intent to adopt NFC mobile payment (see Model 1 and Model 2). Compared to all other races, Whites had lower intention to adopt NFC mobile payment. In addition, those who had an annual household income between \$30,000 and \$49,000 had higher intention compared to those whose income was less than \$30,000.

TABLE 5. Beliefs and NFC Mobile Payment Intention by Financial Experiences

	Intention	Trust	PEU	PU
Payment Method				
Card-only users (<i>n</i> = 41)	4.678	4.817	5.585	5.764
Cash-only users (<i>n</i> = 207)	4.562	4.821	5.396	5.617
Cash and card users (<i>n</i> = 215)	4.507	4.836	5.753	6.003
Type of Mobile Banking				
Never (<i>n</i> = 38)	3.858	4.395	5.421	5.474
1 type (<i>n</i> = 45)	4.098	4.639	5.467	5.585
2 types (<i>n</i> = 76)	4.608	4.905	5.509	5.825
3 types (<i>n</i> = 109)	4.473	4.851	5.657	5.850
4 types (<i>n</i> = 96)	4.735	4.953	5.622	5.899
5 types (<i>n</i> = 99)	4.867	4.874	5.616	5.896
Type of Mobile Payment				
Never (<i>n</i> = 79)	3.896	4.291	5.392	5.460
1 type (<i>n</i> = 103)	4.221	4.823	5.511	5.825
2 types (<i>n</i> = 97)	4.503	4.660	5.481	5.763
3 types (<i>n</i> = 87)	4.903	5.210	5.801	6.004
4 types (<i>n</i> = 61)	4.970	4.980	5.738	5.995
5 types (<i>n</i> = 23)	5.339	5.196	5.406	5.826
6 types (<i>n</i> = 13)	5.631	5.462	6.051	5.949

Note. NFC = near field communication; PEU = perceived ease of use; PU = perceived usefulness. Bold values indicate that the significant group mean differences based on analysis of variance (ANOVA) tests.

Figure 2. Mediation analysis of non-NFC mobile payment on adoption intention.

Note. Direct effect presented in parentheses. CI = confidence interval; NFC = near field communication. *** $p < .001$.

Discussions, Limitations, and Implications

Discussion

This study sought to determine the association between beliefs, and financial experiences of using different payment methods, mobile banking, and older mobile payment methods with the intention to adopt the more advanced no-touch NFC mobile payment technology. The multivariate estimation of a conceptual model provided evidence to

confirm significant associations between some financial experiences and beliefs with the intention to adopt this type of mobile payment. Specifically, the hierarchical analysis showed that users who incorporated electronic cards in their payment methods as opposed to using only cash had lower intention to adopt NFC mobile payments. Mobile banking was not significantly associated with the adoption intention of NFC mobile payment. However, previous experience in

TABLE 6. Hierarchical Regression Analysis

	Model 1	Model 2	Model 3	VIF
Financial Experience Variables				
Payment method (ref = cash-only users)				
Card-only users		0.017 (0.223)	-0.006 (0.158)	1.21
Cash and card users		-0.026 (0.124)	-0.056 [†] (0.893)	1.20
Mobile banking		0.042 (0.045)	0.038 (0.312)	1.44
Non-NFC mobile payment		0.332*** (0.043)	0.174*** (0.031)	1.48
Beliefs				
Trust			0.630*** (0.037)	1.51
Perceived ease of use			-0.010 (0.054)	2.04
Perceived usefulness			0.099* (0.062)	2.42
Controls				
Rewards	0.094* (0.194)	0.098* (0.183)	0.021 (0.132)	1.05
Male	0.036 (0.169)	0.033 (0.160)	0.017 (0.114)	1.07
Age 26–35 (ref = age 18–25)	0.001 (0.135)	0.020 (0.129)	0.015 (0.091)	1.08
White (ref = other)	-0.097* (0.147)	-0.039 (0.142)	-0.056 [†] (0.101)	1.09
Education (ref = high school or less)				
Some college	0.045 (0.163)	0.020 (0.155)	0.012 (0.110)	1.47
College degree	0.056 (0.160)	-0.018 (0.157)	0.028 (0.112)	1.74
Graduate degree	-0.007 (0.261)	-0.040 (0.251)	0.008 (0.179)	1.35
Income (ref = less than \$30,000)				
\$30,000–\$49,999	0.020 (0.157)	-0.004 (0.149)	0.067 [†] (0.105)	1.46
\$50,000–\$79,999	0.019 (0.170)	-0.038 (0.162)	0.019 (0.116)	1.52

(Continued)

TABLE 6. Hierarchical Regression Analysis (Continued)

	Model 1	Model 2	Model 3	VIF
\$80,000 or more	0.039 (0.227)	-0.016 (0.217)	0.046 (0.154)	1.36
<i>N</i>	463	463	463	
<i>R</i> ²	0.023	0.139	0.567	
<i>F</i>	1.081	5.173***	34.288***	
ΔR^2		0.116	0.428	
ΔF		20.310***	146.786***	

Note. Standardized coefficients are reported. Standard errors in parentheses. Constant estimated but omitted from table. †*p* < .10. * *p* < .05. ** *p* < .01. *** *p* < .001.

non-NFC mobile payment had a significant positive association with the intention to adopt NFC mobile payment. These included sending money through Venmo, PayPal or Google Wallet, scanning a QR code, remote purchases or bill payments using mobile phone browsers or apps, donations using text messaging, or paying for public transport, parking, taxi, or rideshare services.

The finding that financial experiences are associated with the adoption intention of NFC mobile payment is consistent with previous research about the adoption of other types of mobile payments (Kim et al., 2010). However, it was interesting to note that the association was not uniform. For instance, having experience in electronic card payments seemed to have the opposite effect on possibly adopting NFC mobile payment. This could suggest that for the time being among non-users, NFC mobile payment was not being viewed as a replacement nor better preference over electronic cards. Trutsch (2016) found that mobile payment was more of a substitute for paper-based cash or check payments which is suggested in our results. Therefore, there is potential for cash users to consider making the larger leap to adopt NFC payments than those who already use other forms of electronic payments.

Regarding prior mobile phone financial experiences, it is no surprise that those with prior mobile payment experience different from NFC would be more curious about trying it. However, the results did not show a significant association between mobile banking even after accounting for one's level of trust in the NFC payment technology. Mobile banking involves personal financial account management whereas mobile payments involve interacting with a POS terminal to pay for goods or services. Thus, this

result adds some clarity to the literature about how mobile banking and mobile payments are related (Dahlberg et al., 2008).

It appears consumers with higher trust and higher perceived usefulness about NFC mobile payment have greater intentions to adopt it irrespective of perceived ease of use. In addition, the intention to adopt NFC mobile payment of consumers with more previous non-NFC mobile payment experiences can be further enhanced by increasing trust. The sample was predominantly Whites who were less likely to adopt NFC mobile payment compared to other races. This could be that they already are using electronic payments and see no value in adopting this latest payment technology. The result is also supported by Li, Hanna, and Kim (2020).

Limitations

The present study was limited to younger adults between 18 and 35 years old. Therefore, the results may only be typical of those included in these age groups. The data collection was performed online by a third-party contractor who recruited our target sample to be nationally representative sample within our required age group. However, in hindsight, we could have included more age groups despite what we know about younger generations being early adopters of new technologies. Also, the sample was predominantly White and female, the generalizability of the findings is thus limited.

While the belief measures of the multi-items are largely based on previous studies, the understanding of how the new technology works may skew how these measures are interpreted by consumers in the context of NFC mobile payment. This is a blanket assumption that may not apply to new

financial technologies. We could have also controlled for mobile phone possession and whether respondents knew if their mobile devices were NFC-enabled. However, respondents were asked to assume they had access to an NFC-enabled phone while completing the survey.

Due to the small sample size, we were not able to estimate the separate influences of different types of mobile banking functions and non-NFC mobile payment activities. Future research could explore this especially in the case of mobile banking who association with mobile payments is not fully understood. Examining the different typical mobile banking activities could help tease out and identify patterns of association between mobile banking behaviors and mobile payment tendencies.

Implications

Service providers and financial institutions need to educate consumers about security and convey the added convenience of the method above others in order to increase adoption rates. Mobile payment providers also need to target minority groups that disproportionately do not use traditional electronic payments tied to checking accounts due to high unbanked rates among these subgroups. This could be an opportunity to increase NFC mobile payment adoption rates among these groups as they use prepaid debit cards and mobile wallets.

Financial educators and advocates need to address privacy concerns through targeted education programs. This is especially true for trusting users who may not take necessary precautions to ensure the privacy of their financial information when using non-touch mobile payment services near other NFC-enabled devices, not just POS terminals. Consumer advocates may also seek increased policy oversight to ensure privacy and redress measures in NFC mobile payment channels. This, in turn, could increase perceived trust in the technology if regulations are in place to guarantee security and redress for both consumers and providers.

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Disclosure. The authors have no relevant financial interest or affiliations with any commercial interests related to the subjects discussed within this article.

Acknowledgment. The authors gratefully thank the referees for the constructive comments and recommendations which substantially helped to improve the quality of the paper.

Funding. The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the University of Georgia, Jan M Hathcote Social Science Academic Support Fund, awarded to Haidong Zhao.